

ing only at the base, rigid, about 1.5 mm. in diameter; leaves about 10-ranked, short, about 1.5 mm. long, closely appressed, grooved dorsally in the lower two thirds, ending in a slender white coiled hair 0.7–0.9 mm. long, and with 8–12 very short minute cilia on each margin; strobiles inconspicuous, less than 5 mm. long, terminal on the branches, the sporophylls similar to the ordinary leaves but wider and graduating into them; microsporangia three-lobed, the microspores pale yellow, rugose-reticulate, 0.44 mm. in diameter; microsporangia round-reniform, the microspores bright yellow, smooth, 44μ in diameter.

Near Highlands, Macon County, North Carolina, altitude 5,000 ft. J. Donnell Smith, 1882; W. L. Sherwood, 1901 and 1902 (type in the New York Botanical Garden).

Specimens of this plant first collected by John Donnell Smith are fairly well represented in D. C. Eaton's collection and more meager specimens are in the Gray herbarium; they have hitherto been confused with *S. tortipila* A. Br. Fine plants of this beautiful species have been collected in 1901 and again in 1902 by Mr. W. L. Sherwood, and these have enabled us to draw up the above description. The plant is allied to *S. tortipila* which it resembles in the coiled or twisted terminal hairs of the leaves. *S. tortipila* was described by Alexander Braun from plants collected in 1841 by Rugel and a cotype of the species is in our herbarium. In place of the slender lax sprawling habit of *S. tortipila* with enlarged though short strobiles, we have here a very compact bushy or tree-like plant with stout stems, many-ranked leaves, and strobiles which are scarcely noticeable as the branches graduate imperceptibly into them without enlargement. There is also a fragmentary specimen of this species in the Gray herbarium collected in South Carolina also by John Donnell Smith so that the species is likely to be found at various places in the higher altitudes of the Southern Appalachians.

VACATION OBSERVATIONS. I

BY FRANCIS E. LLOYD

Displacement of Leaves.—Occasionally a maple twig is found in which the leaves are arranged in decussating whorls of threes. If we accept the explanation that decussating pairs of leaves arise

by the shortening of alternate internodes, we must see in the stem of the *Catalpa* which normally has decussating whorls of three leaves, and in the maple twigs referred to, pairs of successive reduced internodes alternating with single normal internodes. Evidence that this is the case is seen in an abnormal twig of *Acer Pennsylvanicum*, found by the writer, in which the leaves of one pair were displaced, and so removed from each other, by a distance of $\frac{1}{16}$ inch and those of the next pair by $1\frac{1}{4}$ inches. The specimen is of further interest in the fact that the leaves of the former pair were alsodis placed, but here laterally, so that they lay in two separate axial planes, instead, as in the normal condition, in one. Such a displacement must occur in twigs which normally bear paired leaves when a third appears in the whorl. In the twig here described, however, the displacement was in the wrong direction, when referred to the upper displaced leaf of the next lower pair, so that three leaves were, in this way, crowded upon one side of the twig. Had the other leaf, *i. e.*, the lower of the under pair, been the upper, the relation would have then been, as one would have expected, regular.

The use of Wings in the Fruit of Accr. — The generally accepted view concerning the use of the wings in the fruit of *Acer* is that they serve as organs of flight to aid in dissemination. It is not impossible that they serve some other function, and I have endeavored to determine whether, during the development of the embryo, they may be of use in manufacturing foods for its nutrition. A certain amount of anatomical evidence is present to indicate that this is the case. Thus the venation appears to be so disposed as to serve for the translocation of solutions toward the embryo; and the minute structure, both as regards the stomata and the mesophyll, is very like that of a non-dorsiventral leaf, such as that of *Lactuca scariola*, or the phyllodia of various plants. There is but little development of spongy parenchyma; otherwise the organ is quite leaf-like.

By applying the iodine test it was shown that the wings are very active in the making of starch during the day, and, as in leaves, the materials accumulated during daylight suffered translocation. On the supposition that this movement of the starch

was directed toward the embryo, and ultimately reached it, the wings were removed from several dozen fruits with embryos in early stages of development. It was expected that the embryos of these fruits would show some signs of malnutrition, but as a matter of fact none did so, showing without doubt that the hypothesis toward the testing of which the experiments were directed was false. It would appear that, if the substances which are formed in the wing are of any use to the embryo, their amount forms no important part of the food supply. It may be possible that there was some compensation of some sort, but that is not very likely. So that for the present we may adhere to the view that these organs serve a useful turn after the close of their development; and their origin, if this is true, may be explained, so far as our present knowledge takes us, only by the workings of natural selection. The whole subject of the exact function of wings in fruits is open to investigation, for it is clear that the wings which occur in dehiscent fruits cannot be interpreted in the same fashion as those in indehiscent fruits.

SHORTER NOTES

NOTE ON THE "REPORT OF THE BROWN-HARVARD EXPEDITION TO NACHVAK, LABRADOR."*—Dr. E. B. Delabarre, of Brown University, in listing the Hepaticae collected on this expedition to Labrador, states that "all seven of the hepatics here named are now reported for the first time, although three of these names can be given as yet only provisionally," and in a later note remarks, "none of these are reported by the previously-named authorities, nor by W. H. Pearson in his *List of Canadian Hepaticae* (1890)." The "previously-named authorities" do not appear to include any American students of the Hepaticae and Dr. Delabarre has evidently overlooked the most complete list of Labrador Hepaticae yet published, a list of thirty-one species collected by the late Rev. A. C. Waghorne and Mr. O. D. Allen and published by Professor Underwood in the *Bulletin of the Torrey Botanical Club* in 1892 (19: 269). Four out of the seven of Dr. Delabarre's list are reported by Professor Underwood.

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* Bull. Geog. Soc. Phila. 3: 167-201. 1902.